OYSTERS

AND THEIR CULTIVATION

COMPILED FROM AUTHENTIC SOURCES,

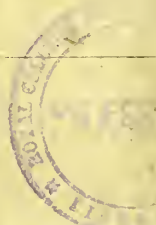
BY ORDER OF

THE BOARD OF DIRECTORS

OF THE

SOUTH OF ENGLAND OYSTER COMPANY,

LIMITED.



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OYSTERS, AND THEIR CULTIVATION.

The oyster is the most delicious and the most highly appreciated of all fish; it is the most wholesome of all food, never disagreeing with the most delicate stomach; it is highly nutritious, and, from the fluids in which it is bathed, eminently digestible. Having all these good qualities, the oyster has been sought as a luxury by all European nations, but in London the artisan class have long recognised its value as an aliment, and immense numbers of the coarser descriptions are annually sold in the streets of London by hawkers and small stall-keepers. Thus consumed by all classes, the demand has gradually exceeded the supply; prices have risen, beds have been exhausted, and at the present moment the best native oysters are £6 a bushel wholesale, and eighteen-pence a dozen retail, almost a prohibitive price, and with a rapidly rising market.

The French having recognised the importance of the oyster as an article of food, and the gradual exhaustion of the natural beds, M. Coste, under the auspices of Government, in the year 1857, established model Oyster Farms in the Bay of St. Brieuc. Without entering fully into the details of the experiments entered into by the French, the following observations may be considered to represent the amount of knowledge we possess concerning the oyster, and the condition of the science of oyster cultivation:

The oyster spawns annually from the month of May to the month of September, in the third year of its growth, if not earlier.

The number of germs or ova brought forth by a mature oyster exceeds one million.

The spawn, when first ejected, is, in the language of the dredgers, "floatsome," and requires some prominent object to which to attach itself, such as shells, stones, &c., which under these circumstances are termed "cultch."

When observed in its early stages adhering to the cultch, the spawn has the appearance of spots of tallow, in which the shell is seen rapidly to develop itself, and to form very soon a complete miniature oyster.

In this state it is called "spat," 25,000 of which, as nearly as can be estimated, go to the bushel.

Spat in the second year is denominated "brood," of which from 4,800 to 6,400 make a bushel.

In the following year, brood becomes "ware," from 1,800 to 2,400 to the bushel; and the fourth year "oysters" from 1,200 to 1,400 per bushel.

The food of the oyster is supposed to consist of minute infusorial animals, with which sea-water abounds.

When kept in an aquarium, the oyster may be observed to lie with its shells slightly apart, and by means of the ciliary organs of its "beard," or branchial fringe, to create a continuous current of water, which thus brings within its reach the nutritive particles of which it stands in need, as well as to pass excrementitious matter like other molluscous animals.

It has long been known that the oyster is greatly improved in condition and edible qualities by being transplanted from situations in the open sea to places where an abundant supply of fresh water is discharged.

In the London market, oysters are divided into two great classes, "natives," and "commons."

Native oysters are those bred in the waters of the Thames estuary and the creeks of its affluents, both of the Kent and Essex sides.

The superiority of the native oyster consists in the rela-

tively large size of the fish compared with that of the shell, its remarkable succulence, delicate flavour, and compact shape, as well as the hardness and brilliancy of its shell.

The price at which natives sell is accordingly very high in comparison with that of other kinds, and has lately ruled, for oysters of from four to six years' growth, from £5 to £6 per bushel, containing about 1,600.

By the term "commons" are known all other oysters, which are, however, distinguished from each other by the name of the locality from which they are taken, such as Channel Oysters, Jersey Oysters, West Country Oysters, &c.

OYSTER BEDS

Are of two kinds as regards the quality of their produce, namely, beds of common and beds of native oysters.

Of two kinds as respects their proprietorship, namely, public beds and private beds.

Of two kinds as to their origin and system of management, namely, natural and artificial.

It is at present impossible to say to what cause or combination of causes is to be ascribed the great superiority of natives over all other oysters. The most remarkable circumstance connected with the native beds is, that they are all situated on the "London Clay," or geological formations of similar character.

Many of the best-known beds of native oysters are, to a very great extent, factitious. They possess no certain power of reproduction, and would soon become exhausted, unless supplied with brood from other beds better situated for the retention of spawn and the production of spat. Of this kind are the celebrated Whitstable Oyster-beds, where a good fall of spat is a mere accident, which however sometimes puts as much as £30,000 into the pockets of the Whitstable Oyster Company in one year, by rendering the purchase of brood unnecessary.

No artificial contrivances of any kind are in use on those beds for saving the spawn, which is left to settle by chance on the cultch of the beds, or on the adjoining foreshore, or else to be drifted off to sea and lost.

Private oyster-beds are those which are in the exclusive possession of individuals or companies, and are marked out by buoys or other boundaries.

All other oyster-beds are public property, and open to all.

Natural oyster-beds, properly so called, are, for the most part, beds of common oysters, and generally public property. They are always situated beyond low-water mark, and are seldom covered with less than three feet of water at low tide.

Artificial oyster-beds, truly so called, are those in which reproduction is secured by artificial means.

With the single exception of the oyster-beds of the Lake of Fusaro, near Naples, which had their origin in Roman times, they are of modern creation, having been invented by Professor Coste, and worked out by him on the French coast, to which they are as yet confined.

Beds of this description are formed on the foreshores, and not below low water.

The object of placing them on ebb-dry ground is, to facilitate the construction and care of the contrivances which are required for retaining and fixing the spawn, as well as the "working" of the oysters on the beds.

Working is an operation by which oysters are greatly improved. It consists in detaching the brood from the cultch, separating young oysters when joined together, destroying star-fish, dog-whelks, and other vermin, as well as in removing, by stirring it up, the ooze or "sludge," which is liable to settle on the beds and smother the oysters.

On beds situated below low-water mark, working has to be done in boats, by dredging, and requires as many as eight men per acre. Beds on the foreshores are worked by men on foot and armed with rakes, two of whom suffice to keep in order one acre of artificial oyster-beds.

Working by dredge from boats, besides being less certainly efficacious than working on ebb-dry ground, owing to the beds being hidden from view, has the additional disadvantage of being destructive to the tender spat and brood, which are readily injured by the heavy dredge in its passage along the bottom.

Frost in winter, and the sun's rays in summer, both of which are destructive to the oysters left dry by the tide, are prevented injuring the stock on artificial beds, by arranging the surface of the ground in such a way as to retain about a foot of water at ebb tide.

The experience of the French in this respect is borne out by that of the proprietors of some of the foreshores in the Thames, where spat falls naturally from time to time in uncertain quantities. They find that such spat can always be preserved and reared, even in the most severe winters, on those portions of their grounds where the water, when at its lowest, lies a foot deep, or even less.

The average rate of reproduction obtained in France by artificial breeding arrangements is about fourteen-fold, which, after paying expenses, leaves a clear profit of 1000 per cent. Though affording a very handsome return, this still exhibits an enormous amount of waste, which further improvements in the means of arresting and fixing the spawn will no doubt greatly lessen, and to that extent augment the profits to be derived from artificial oyster culture.

The following is an abstract of a report made by Messrs. Nicolle and Le Huguet to the Committee appointed by the States of Jersey to inquire into the condition of the French Oyster Fisheries:—

"On the Island of Ré an incredible quantity of oysters has been produced on a sea-shore which a few years ago was of no value, so that this branch of industry now realises extraordinary revenues, and spreads comfort among a large number of families who were previously in a state of comparative indigence.

"At St. Martin the authorities have established model oyster-beds, where we saw the upper part and sides of stones covered with oysters in numbers almost incredible and of remarkable beauty. At low water, when the beds are uncovered, the sight is magnificent. Here we made the acquaintance of Dr. Kemmerer, a man of some standing, who employs much of his time in the breeding of oysters, and who has published a work of a very interesting nature on the subject. It appears that this industry, which now forms a source of great riches for that small place, only dates from 1858. In the short period which has since elapsed, upwards of 2,000 beds have been formed on an extent of five miles of fore-shore. Those beds, of thirty yards' square, cost £12 each for their construction. In an admirable statement at the end of his book, Dr. Kemmerer shows that in three years the results have been the immense profit of one thousand per cent., after paying the expenses attendant on the formation of the beds.

"The Commissary of Marine at Teste, in the Bay of Arcachon, conducted us to some beds which are very prosperous, and where workmen were employed in detaching the young oysters from each other in order to give them room to grow. We met the proprietor of one of those beds, who had laid down on them 500,000 oysters scarcely three years ago, and he now estimates the return at not less than 7,000,000.

"We then visited St. Brieuc, where hardly two years since parent oysters were deposited on beds which had become exhausted. Already a single bed has yielded 17,000,000 of young oysters, besides a multitude of others of smaller size."

The fattening of oysters in "Claires" is thus described by Messrs. Coste and Kemmerer, and forms a distinct industry to that of breeding:—

"At Marennes.—The mud-ponds, called *claires*, resemble so many fields overflown with water, established in different places along the two banks of the river Seudre, extending

over several leagues along the shores, and forming an immense estate where a curious and lucrative trade is carried on, the state sanctioning its development by concessions of ground made to fishermen who wish to cultivate it. The claires differ from the ordinary oyster parks (or breeding ground), because they are not submerged as the parks are at each tide, but only at high tides, when the sea rises to a sufficient height to cover them, as a too frequent submersion would be an obstacle to the object of the undertaking. Each claire is from twenty-five to thirty yards' square, surrounded with a bank of earth about three feet in height and in thickness, forming a dyke upon which the guards walk, thereby to watch and protect their work.

"The marly ground, which I consider the *perfection* of oyster ground, is that in which the oyster takes a perfect form, and fattens quickly. I say quickly, because the end and aim of oyster culture should be for the oyster to attain perfection as rapidly as possible. We should consider the mud-ponds only as requisite for the growth and fattening of the oyster.

"The oysters on the rocky shore are meagre, not very agreeable in taste, and have no nutritive qualities. But they fatten these oysters in parks for sale for all the markets of Europe, under the name of oysters of Ostend, Cancale, Dunkirk, and English natives. When this oyster is fattened, it is agreeable to the palate, but still has not positively nutritive qualities. This shore oyster, however, has had the honour of being cited by Pliny, Cicero, Horace, and Seneca. They were eaten in large quantities by the Africans and Chinese. Our modern people of Paris eat 132 *millions*, costing 2,214,344 francs (£88,573). The Roman Sergius entertained the high society of Rome on them. Marshal Junot ate three hundred before breakfast. But the culture of this oyster in the mud-ponds and in the marl,—a culture which ought some day to become general,—changes completely its qualities, the albumen becomes fatty, yellow or green, oily,

and of an exquisite flavour. The animal and phosphorous matter increases, as does the ozmazome. This oyster, when fed, becomes exquisite food. In effecting the culture of the sea shores, and of the marl ponds, I am pursuing a practical principle of great importance, by the conversion of millions of shore oysters (squandered without profit) into food for public consumption. The green oyster, to this day, has only been regarded as a luxury for the tables of the rich, but I would like to see it used as food for every one.

"We have proved that the mud-ponds are feeding grounds to which all the young oysters should be conveyed, and in which are found all the requisite elements for bringing them to perfection.

"The shore oyster can only be eaten during a few months. The oyster of the mud-ponds, on the contrary, can be eaten during nine months. We thus double the quantity of oysters for the public consumption. Government does not hesitate to modify the laws on this point. When we have learnt how to cultivate oysters, the shores will have their crops of these valuable molluses from Médoc to Bordelais.

"When you wish to partake of oysters, you may seek in the mud-ponds, so justly renowned, of Ars and of Loix to obtain the oyster which is unrivalled, and you will then know the exquisite and unctuous taste which this exeellent mollusc gives.

"In the marl the young oyster finds plenty of food, constant heat, and perfect quiet; wherever there is mud and sun, there will be found the little molluscs, crustacea, and swarming infusoria, which are the food of the oyster. This is the ground on which they will grow the quickest.

"In cultivating only the oyster seed upon the shores, you will have two elements of success in your industry: the first in saving a great part of the young, which would otherwise be destroyed; the second, in making salcable oysters in three years at the most, when four years are necessary for the oysters in the slimy parks."

The following are authentic statistics of the oyster industry of the Ile de Ré, in the fourth year of the establishment of the beds:—

Parks for collecting Spawn and Breeding .	2,424
Fattening Ponds (Claires) . . .	839
Supposed number of Oysters in Parks .	74,242,038
Aggregate number in the Claires . .	1,026,282
Revenue of the Parks	1,086,230 frs.
Revenue of the Claires	40,015 ,,
Heetares of Ground in Parks and Claires .	146
Proprietors of Beds	1,700

These figures give about £125 per aere per annum.

The following is Mr. Harry Lobb's Report upon the adaptibility of the inelosed portion of Langston Harbour to the breeding and fattening of Oysters:—

"Oyster Farm, Langston Harbour,
"*September*, 1865.

"Gentlemen,—On Saturday, the 23rd instant, I went to Havant, where I was met by Mr. Hart, who accompanied me to Langston Harbour, for the purpose of examining the mud-land now partially enclosed by the Havant and Hayling Railway.

"It being high water at the time, an expanse of most beautifully clear sea water, stated to be about 900 acres, spread itself before us, bounded on the north by a short spur of embankment, running from the island to the railway, which ran along the west boundary of the water a quarter to half a mile. The east was constituted by a pebbly beach, which swept round, forming also the southern portion; the western, again, was formed by the railway embankment, stretching out about half a mile, and terminating in the piles forming a bridge over the Sinah-lake.* There is one to

* Lake, the local name for the stream draining the tidal water from mud-lands.

two miles of embankment to be made, completing the western boundary, when the 900 acres of mud-land will be enclosed, with the exception of the Sinah-lake, which runs under the previously mentioned bridge.

"Between the southern portion of the enclosed mud-land and the sea is a quarter of a mile of shingly gravel, which will be useful for any embankment, etc., to be made. The water having run off the mud, a large expanse of tolerably flat dark blue mud, intersected by the lakes, is exposed; these drain into the large deep Sinah-lake, stated to be thirty feet deep where it passes under the railway bridge. The mud is so hard, that although the water had only just drained off it I was enabled to walk upon it without soiling my boots; and Mr. Hart took us to two patches of shingle, which he stated had been laid down two months (this was afterwards confirmed by Mr. Furness). This gravel was perfectly clean, and did not contain a particle of mud.

"On the portion (300 acres) proposed to be at once enclosed there are two or three small lakes; these contain the oyster-beds vacated by Mr. Crouch, the local oyster merchant, and who, since having received notice from Mr. Hume, has removed his fattening beds to the same lake, only on the seaward side of the railway. These lakes, I should suggest, will require levelling to a certain extent.

"There are from fifteen to twenty boats for oyster dredging leaving Langston Harbour, and dredging in the neighbourhood of Ryde, Cowes, Calshot, etc., and bringing the oysters into Langston Harbour, where they are sold by the tub for laying down. Mr. Crouch has been accustomed to purchase these oysters, and laying them down for fattening. These very same oysters produce the celebrated Emsworth natives, considered by judges to be superior even to those of Whitstable and Colchester; they are also laid down at Newtown, Isle of Wight, producing a very delicious oyster.

"In fact, from all the evidence I have been enabled to gather in the neighbourhood, and also from my own obser-

vation at the place itself, there can be little doubt that a more favourable spot for the breeding and even fattening of oysters could not be found upon the whole south coast of England. "HARRY LOBB."

The following is a translation of a Report made by Professor GERARD VON YHLAND, of Upsal, who has been deputed by the Swedish Government to study Oyster culture in France and England:—

"At the request of Mr. George William Hart, I visited Langston, to examine the ground he intends appropriating to the culture of Oysters, and after having done so, I beg to offer the following Report as the result of my observations:—

"The ground in question contains about 1000 acres, and is situated between the new Railway to Hayling and the shore of the Island, and is what in Sweden we call a 'Fjord,' or that portion of the sea bottom which is dry at low tide and deep sea at high water. It has two long stream-beds and various pools ('Golar') filled with water even at the lowest ebb.

"The bottom consists of—

"1st. Sludge.

"2nd. Slime clay, which in the underlying strata contains a considerable amount of quartz (something like what is termed 'London clay.') The surface is tolerably firm clay, or what the French call 'vase' formed of petrified vegetables and infusorial shells, with small sea shells of the lower orders.

"The origin of these layers I could not distinctly discern during my visit at low tide, owing to the absence of the necessary means for removing it; but in the channels the water was deep, and between the streams tolerably firm.

"This at least was the case near the outer bank, admitting of being walked over without sinking into the mud. At the shore the 'vase' was moderately deep, mixed with sand, and the whole was overgrown with a fine species of algæ and confervæ.

"Judging from what I have seen in France on the borders of the River Scudre, as also at Teste de Buche, or Bay of Arcachon, I consider this place exceedingly superior for the culture of Oysters, both as to situation as also in its excellent condition, added to which is the invaluable circumstance that by means of sluices through the embankment, the height of the water may be regulated, and during the winter the Oysters protected from the influence of extreme cold, and I therefore consider this place the best adapted, and 'the most profit promising' I ever saw, far superior to any in France.

"The reasons for my preference are these—

"1st. That the bottom is of exactly the same formation as that of Marennes, and specially adapted for the construction of the so called Claires, and

"2nd. That without the least doubt 'green oysters' may be profitably reared there. This way of erecting 'Claires' is the most profitable in the whole business and the safest (in this instance particularly so) costing the least, thus avoiding the making of a firm bottom as is necessary in 'Parks.'

"3rdly. The water in this part is of a better condition than that in the Bay of Biscay, where, on account of the very soluble chalk bottom, the water near the shore is mixed with slime, and never clear, so that it invariably kills about two-thirds of the Oysters in the parks on the Ile de Ré.

"4thly. The place has an abundant supply of salt water, the foremost and most important requirement in Oyster culture.

"5thly. The already mentioned command over the height of water by means of sluices.

"These facts enable me, without hesitation, to pronounce this place the best for Oyster culture I ever saw, and superior to all on the borders of France, and if conducted on a good plan, will yield considerable profits, especially if the deep channels be used as 'Viviers' for the culture of the valuable fishes of all sorts.

"(Signed) GERARD VON YHLAND."

OYSTER AXIOMS.

Oysters *breed* in SALT water, on a CLEAN bottom.

Oysters *fatten* in BRACKISH water, on a MUDDY bottom.

Oysters are fit to leave the Breeding Beds when two years old.

Oysters remain in the Fattening Beds from one to two years.

BREEDING Oysters do not FATTEN.

FATTENING Oysters do not BREED.

The natural Oyster Beds of the United Kingdom are nearly exhausted, for, being free to all comers, and from the enormous and increasing demand, the fishermen have dredged them bare.

Private Breeding Beds are *an actual necessity*.

There is a demand for 100,000 acres of Breeding Beds.

South of England Oyster Company,

LIMITED.

Incorporated pursuant to the "Companies Act, 1862," limiting the liability of each Member to the amount of his Shares.

CAPITAL £50,000, in 5,000 SHARES of £10 each.

WITH POWER TO INCREASE.

Deposit on Application £1 per Share; on Allotment £1 per Share.—Calls not to exceed £1 per Share, and at intervals of not less than Three Months.

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